

REMARKS

Applicants have amended the specification to correct a typographical error and amended claims 1, 2, 21, and 22 to more particularly point out and distinctly claim the subject matter which Applicants regard as their invention. Each of the amended claims includes the limitation "the fibers are oriented in a direction crossing with a plane of the fiber cloth." This limitation is recited in original claim 1 and was initially considered by the Examiner.¹ In other words, the amendments to claims 1, 2, 21, and 22 do not necessitate new search or additional consideration. Applicants therefore respectfully request that all amendments be entered.

Claims 1-6 and 13-22 are currently pending. Reconsideration of this application, as amended, is requested in view of the following remarks.

Rejections under 35 U.S.C. § 112, first paragraph

Claims 1-6 and 13-22 are rejected as failing to comply with the written description requirement. See the Office Action, page 2, lines 1-14. Applicants traverse the rejection below:

The Examiner appears to reject claims 1-6 and 13-20 on the ground that the specification does not provide the written description for "not parallel" recited in independent claim 1. See the Office Action, page 2, lines 5-6. Applicants have replaced it with "crossing," a term originally recited in claim 1.

The Examiner also rejects claims 21 and 22 on the ground that the specification "does not provide support for the warp and weft defining pores, and does not provide support for the limitation that some of the fibers are located in the fiber cloth or the pores of the fiber cloth." See the Office Action, page 2, lines 7-9. Applicants would like to bring to the Examiner's attention that, according to the specification, "the number of warps and wefts in a unit area [in the fiber cloth] may be adjusted in order to facilitate to impregnate the fiber cloth 15 with the polymer composition 16 containing the fiber 14." See page 9, lines 10-14 (emphases added). Clearly, the warps and wefts are arranged in such a way to create pores to accommodate some of

¹ In the first Office Action dated July 15, 2005, the Examiner, referring to the recitation "the fibers are oriented in a direction crossing with the fiber cloth" in claim 1, asserted that it is not clear whether the fibers are in the same plane as the cloth or are perpendicular to the cloth in a different plane. Claim 1, as amended, recites that "the fibers are oriented in a direction crossing with a plane of the fiber cloth." Clearly, the fibers are not on the same plane as the fiber cloth.

the polymer composition. In other words, the fiber cloth has pores (defined by warps and wefts) impregnated with a polymer composition. As a polymer composition containing fibers is located in the pores of the fiber cloth, it follows that the fibers dispersed in the polymer composition are also located in the pores. Thus, contrary to the Examiner's assertion, "the warps and wefts defining pores" and "some of the fibers are located in the fiber cloth or the pores of the fiber cloth" are supported by the specification.

Referring to claim 21, the Examiner further points out that "the specification states that the resin which comprises the fibers impregnates the fabric but does not state that the fibers within the resin also penetrates the fabric." See the Office Action, page 2, lines 12-14. As mentioned above, some of fibers, as components of a polymer composition, are located in the pores of the fiber cloth. Given their location in the pores, these fibers penetrate the fiber cloth. Thus, the limitation "some of the fibers penetrate into the pores of the fiber cloth" is also supported by the specification.

Rejections under 35 U.S.C. § 102(b)

The Examiner rejects claim 22 for anticipation, relying on JP 2002212310 (JP '310)

Claim 22, as amended, covers a polymer composite molded body including (1) a polymer matrix, (2) a fiber cloth disposed in the polymer matrix, and (3) fibers dispersed in the polymer matrix. In this molded body, the fibers are oriented in a direction crossing with a plane of the fiber cloth and some of the fibers are located in the fiber cloth.

JP '310 discloses a molded article containing a polymer material and polyester fibers, the polyester fibers being embedded in the polymer material and oriented in a single direction. According to JP '310, the article may further contain fabrics to reinforce the molded article. See paragraph [0054]. Yet, nowhere in this reference is taught that the fibers are oriented in a direction crossing with a plane of the fiber cloth and some of the fibers are located in the fiber cloth, as required in claim 22. Thus, claim 22 is not anticipated by this reference.

Referring to paragraph 0054 of JP '310, the Examiner asserts that this reference teaches that "the fiber and fabric can be intermingled." See the Office Action, page 2, lines 20-21. Applicants would like to point out that "intermingle" means "mix together." It does not specify in any way the orientation and location of the fibers relative to the fabric in a mixture of the

fibers and fabric. In other words, the teaching of “the fiber and fabric can be intermingle” is not sufficient to anticipate claim 1, which requires a unique orientation and location of fibers relative to a fiber cloth.

Rejection under 35 U.S.C. § 103(a)

The Examiner rejects claims 1-6 and 13-22 for being obvious over JP ‘310. Applicants disagree and will first discuss claim 1.

Claim 1 covers a polymer composite molded body including (1) a polymer matrix, (2) a fiber cloth disposed in the polymer matrix, and (3) fibers dispersed in the polymer matrix. In this molded body, the fiber cloth is oriented along an outer surface of the polymer composite molded body; and the fibers are oriented in a direction crossing with a plane of the fiber cloth.

As discussed above, JP ‘310 teaches a molded article containing a polymer material, a polyester fiber, and a fabric. However, it is silent on the orientation of the fabric relative to the surface of the article and the polyester fiber in the article. Of note, the Examiner asserts that “since JP ‘310 does teach that the fibers can be oriented in either a thickness or longitudinal direction, and since JP ‘310 employs the fibers to reinforce the structure, it would have been obvious to one of ordinary skill in the art to have selected the particular orientation of the fibers [] in order to optimize the reinforcement provided to the composite material from the fibers.” See the Office Action, page 4, lines 3-8. Applicants respectfully disagree. JP ‘310 teaches orienting polyester fiber in a single direction to prepare a molded article with excellent anisotropic properties. See paragraphs 0013 and 0014. Anisotropic properties means that properties in one dimension are different from those in other dimensions. In other words, JP ‘310 suggests a molded article having improved properties in one dimension, but not in other dimensions. Table 1 of this reference shows that thus-obtained molded articles have low linear expansion coefficients in the direction parallel to the orientation of the fibers, but have much higher linear expansion coefficients in the direction perpendicular to the orientation of the fibers. According to the present specification, the molded body having the unique design described in

claim 1, on the other hand, possess same or similar properties in all three-dimensions. See page 12, lines 8-14.²

Applicants would like to bring to the Examiner's attention a statement from the M.P.E.P. § 2143.01:

If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.

It is clear that the intended purpose of JP '301 is to provide a molded article having special properties in one dimension, but not in other dimensions. Orienting the fabrics in the article of the JP '310 as described in claim 1 would result in a molded article having the same or similar properties in all the three dimensions. In view of the above-quoted statement, there is no suggestion or motivation for a person of ordinary skill to do so. In other words, claim 1 is not rendered obvious by JP '031.

For the same reasons set forth above, claims 2-6 and 13-20, dependent from claim 1, are also not rendered obvious by JP '310.

Applicants now turn to claims 20 and 21. Like claim 1, claims 21 and 22 each cover a polymer composite molded body including (1) a polymer matrix, (2) a fiber cloth, and (3) fibers. In the molded body of claim 21, the fibers are oriented in a direction crossing with a plane of the fiber cloth and some of the fibers penetrate into the pores of the fiber cloth. In the molded body of claim 22, the fibers are oriented in a direction crossing with a plane of the fiber cloth and some of the fibers be located in the fiber cloth. JP '310 does not teach or suggest either feature.

The Examiner asserts that "reinforcing fibers can be intermingled with the [fabric], which would equate to the limitation to the regarding the fibers penetrating the fabric." See the Office Action, page 3, lines 21-24. As pointed out above, the term "intermingle" does not suggest the orientation and location of the fibers relative to the fabric. It follows that JP '310 does not suggest the unique orientation and location of the fibers as required in claims 21 and 22. In other words, claims 21 and 22 are not rendered obvious by this reference.

² Table 1 of the specification shows that the claimed molded body has similar low linear expansion coefficients in all three dimensions, X, Y, and Z.

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CONCLUSION

Applicants submit that the rejections asserted by the Examiner have been overcome and claims 1-6 and 13-22, as pending, cover subject matter that are nonobvious over the cited prior art. Applicants respectfully request that the Examiner allow this application.

Enclosed is a \$120 check for the Petition for Extension of Time fee. Please apply any charges to deposit account 06-1050, referencing Attorney's Docket No. 14157-012001.

Respectfully submitted,

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